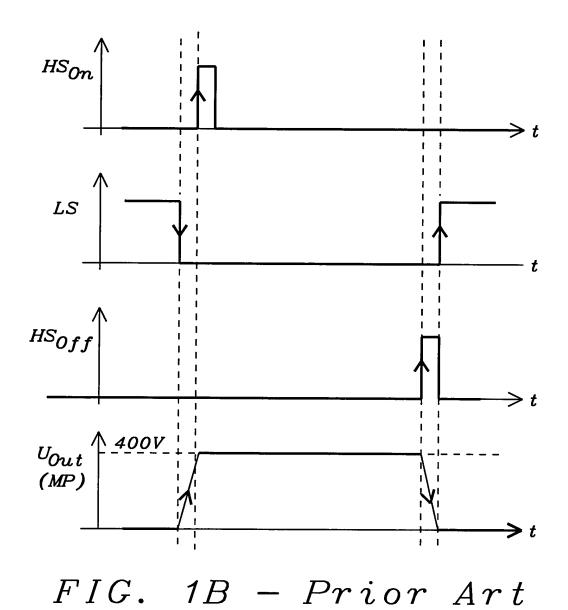


FIG. 1A - Prior Art



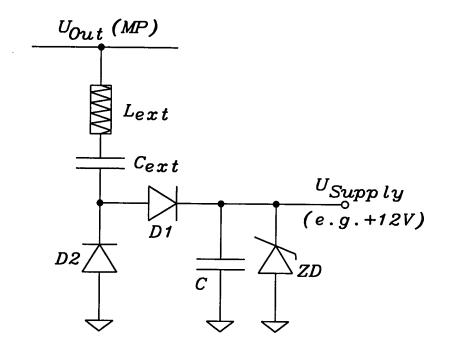


FIG. 1C - Prior Art

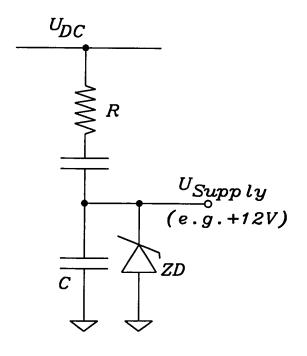


FIG. 1D - Prior Art

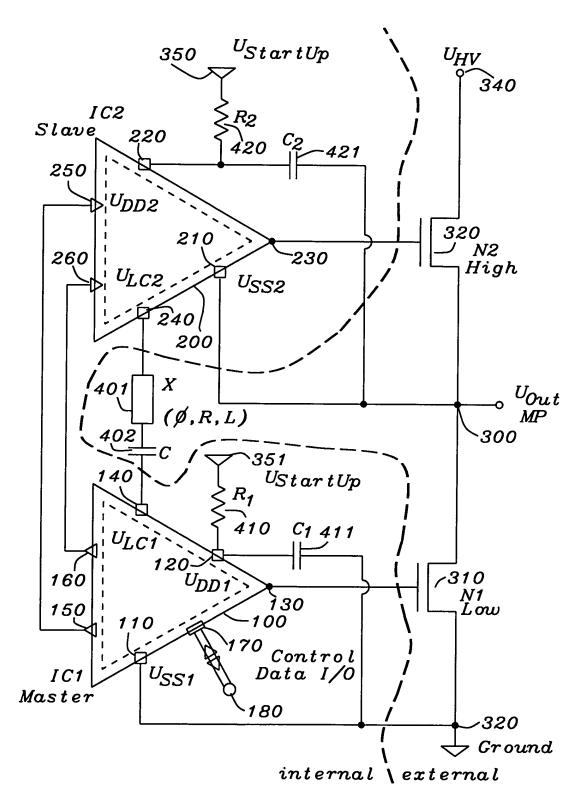


FIG. 2

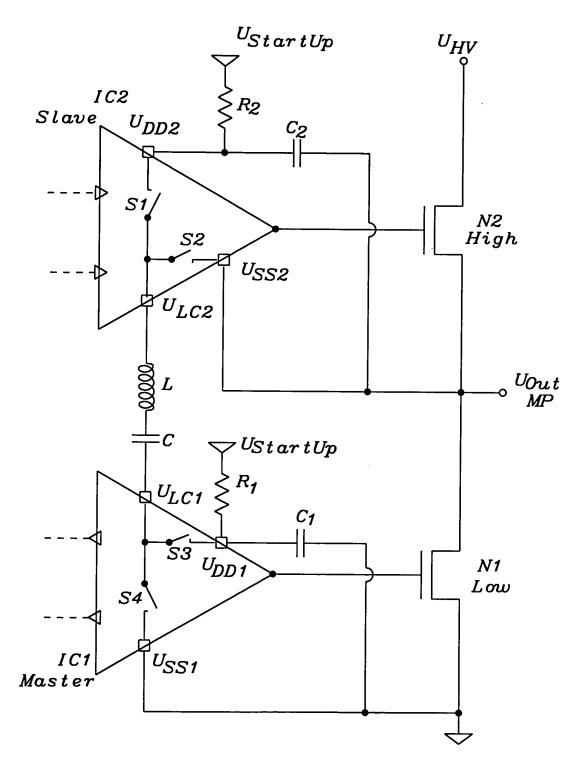


FIG. 3A

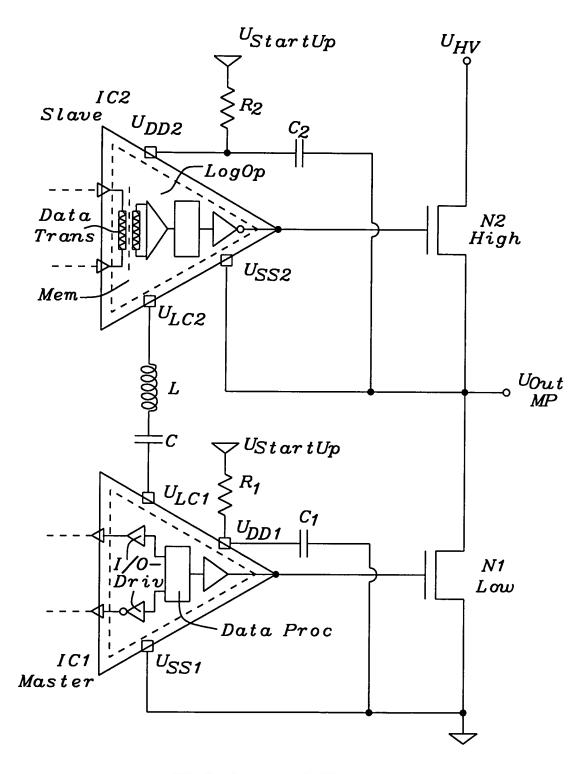


FIG. 3B

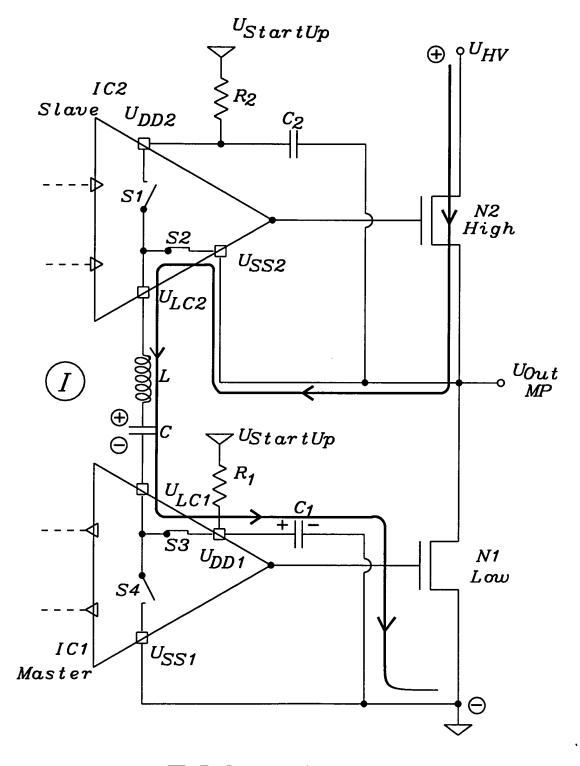


FIG. 4A

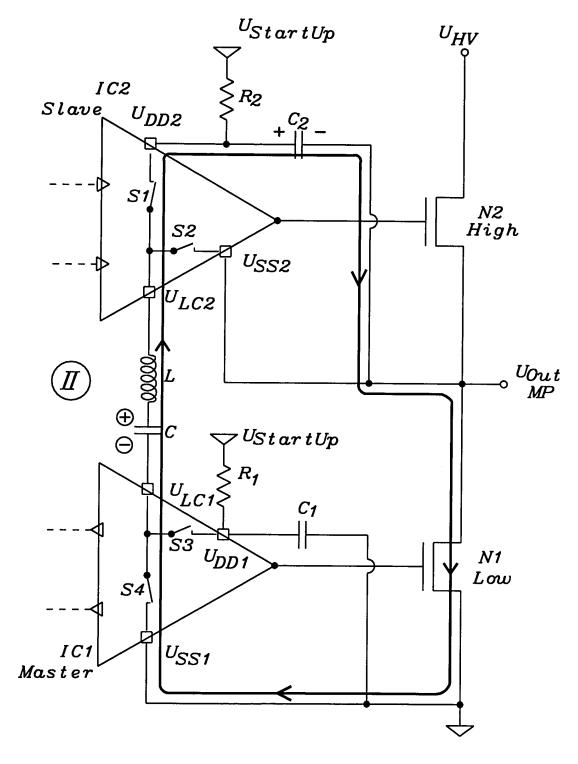


FIG. 4B

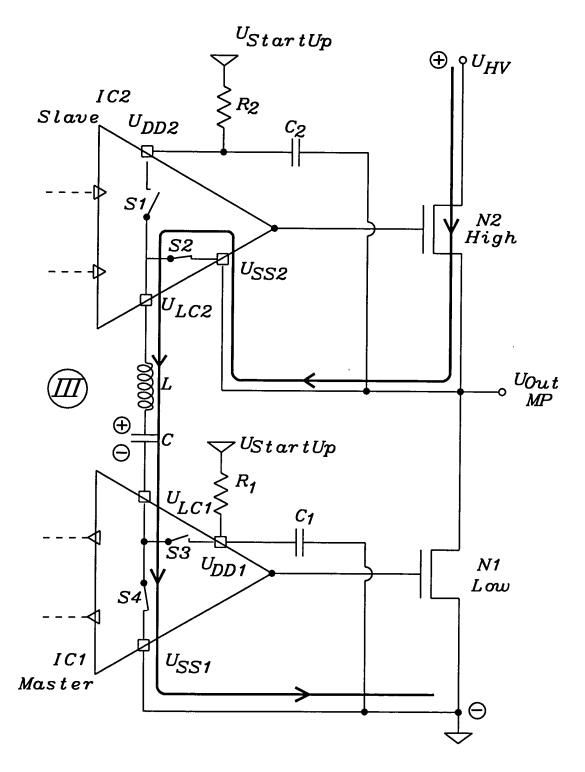


FIG. 4C

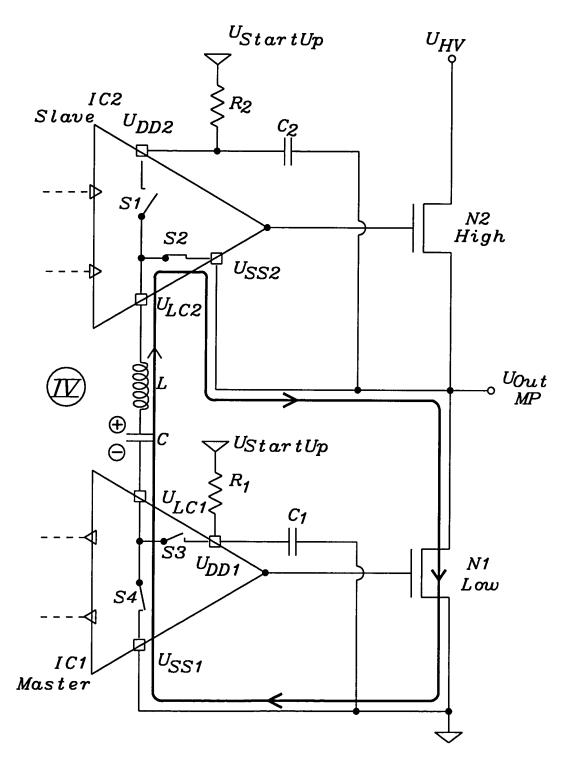


FIG. 4D

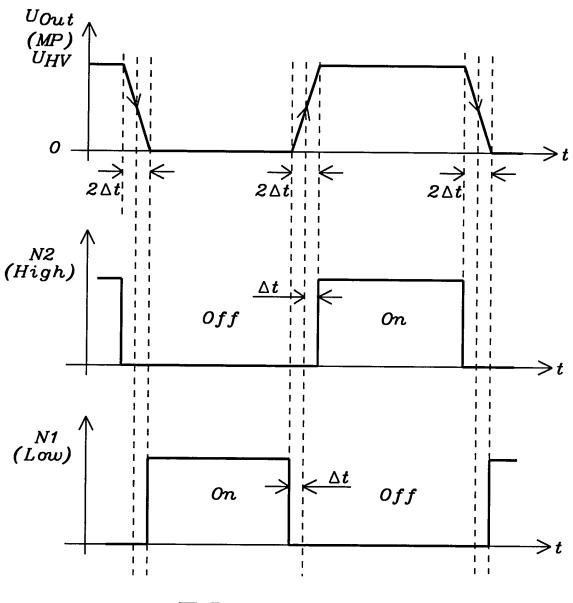
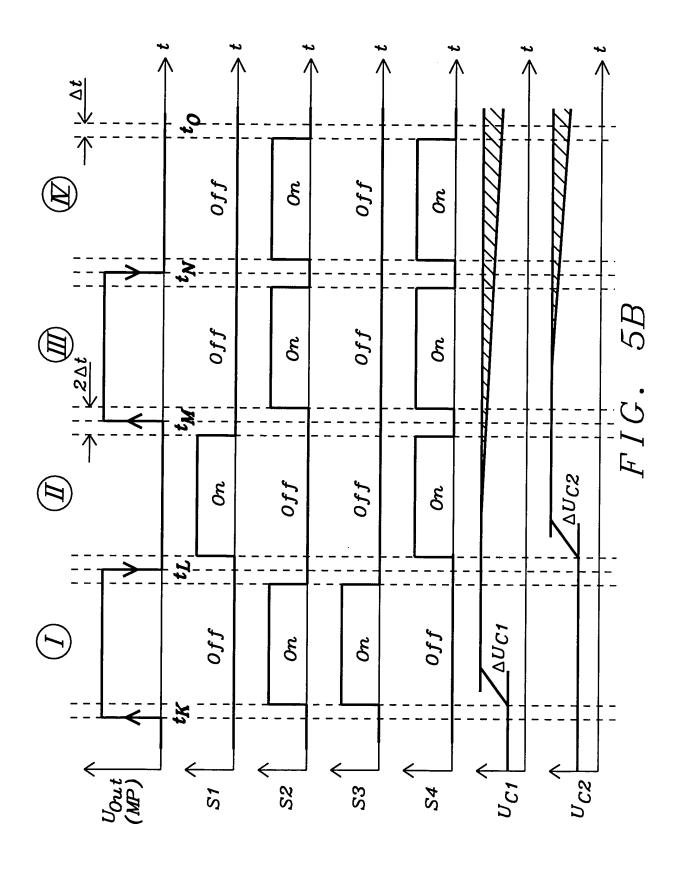


FIG. 5A



Provide multiple external switching devices, arranged in serial connection between the given power and ground terminals of the circuit feeding the available main supply energy, and provide accordingly 610 for each external switching device its own appropriate controller circuit together with its own, individually controlled and regulated appliance for the required auxiliary energy supply Provide separate and individual storage means for said different supply energies and provide internal 620 switches - internal to said controller circuits for transporting, controlling and regulating said energies Provide means for generating, processing and storing information data within said controller circuits 630 for the purpose of control and regulation of each of said supply energies as defined above Provide means for transfer and/or exchange of said information data with an isolating internal 640 potential separation as means for transferring information within and between said controller circuits Start-up an initial bootstrap procedure for controlling and regulating said available main supply energy with said external switching 650 devices, together with generating said auxiliary supply energies, as needed for regular operating said controller circuits

FIG. 6A

(A) |<del>|</del>|

Generate, process, and store information data within said controller circuits for the purpose of transportation as well as control and regulation of every single supply energy, in order to solve the required control task

-660

Set-up and follow a multi segment time slot scheme and realize the controlling and driving of said internal switching devices with the help of said controller circuits and said generated information data within the rules of said time slot scheme

-670

700

Transfer and/or exchange said information data by transmitting and receiving said information data with said means for transferring information between said controller circuits and set-up the controlling and driving of said external switching devices with the help of said information data using said controller circuits

-680

Transport and store said energies between and in said storage devices with the help of said internal switches, and at the same time control and regulate said stored auxiliary supply energies according to the boundary conditions to be kept for the required control solution; again all that within the framework of said time slot scheme

690

Provide two external switching devices, arranged in serial connection between the given power or high-side and ground or low-side terminals of the circuit feeding the available main supply energy, thus creating a mid-point terminal for the output voltage between the two respectively attached high-side and low-side external switching devices	<del></del> 611
Provide a low-side integrated controller circuit for said external low-side switching device together with an individually controlled and regulated low-side appliance for its required low-side auxiliary energy supply, altogether named master controller circuit	<del></del> 615
Provide a high-side integrated controller circuit for said external high-side switching device together with an individually controlled and regulated high-side appliance for its required high-side auxiliary energy supply, altogether named slave controller circuit	616
Provide storage means for said main supply energy, placed between and connected to said integrated master controller circuit and said integrated slave controller circuit	<del></del> 621
Provide a first storage means for said auxiliary supply energy, connected to said integrated master controller circuit	622
$\downarrow$	
Provide a second storage means for said auxiliary supply energy, connected to said integrated slave controller circuit	<b>623</b>
$\downarrow$	
Provide means for transporting and controlling said main energy as well as said individually regulated low-side and high-side auxiliary supply energies in the form of two pairs of internal low-side and high-side switches, internal to said integrated low-side and high-side controller circuits	<b>~</b> 625
$\checkmark$	
FIG. 7A	

Provide means for generating, processing, and storing information data within said integrated low-side and 631 high-side controller circuits for the purpose of control and regulation of each of said supply energies as defined above Provide means for transfer and/or exchange of said information data with an isolating internal potential 641 separation as means for transferring information between said master controller circuit and said slave controller circuit Start-up an initial bootstrap procedure for controlling and regulating said available main supply energy with said external switching devices, together with -651 generating the low-side and high-side auxiliary supply energies for said master and said slave controller circuits .702 Generate, process, and store information data within said two integrated master and slave controller circuits for the purpose of transportation, control, -661 and regulation of said main supply energy and said first and said second auxiliary supply energies Set-up and follow a four segment time slot scheme and realize the controlling of said four internal low-side and high-side switches with the help of said master and slave controller circuits and implement the 671 driving of said master and slave controller circuits using said generated information data within the rules of said time slot scheme

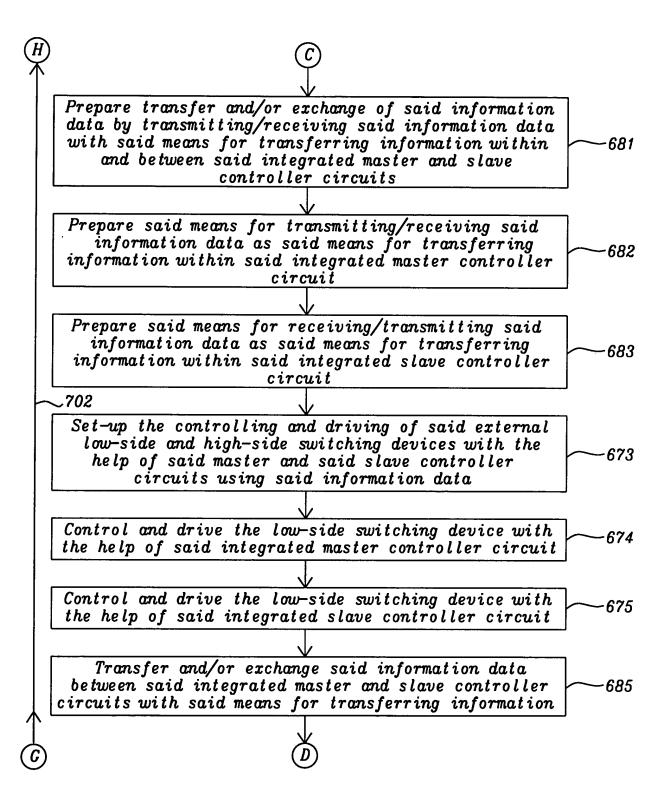


FIG. 7C

© D
Transmit/receive said information data with said means for transferring information at said integrated master controller circuit
Receive/transmit said information data with said means for transferring information at said integrated slave controller circuit
Transport and store said energies between and in said storage devices with the help of said four internal switches, and at the same time control and regulate said stored auxiliary supply energies; again all that within the framework of said time slot scheme
Transport during the first time segment of said time slot scheme a controlled amount of said main supply energy into said means for storing said main supply energy and into said means for storing said low-side auxiliary supply energy
~702
Store said amount of main supply energy into said storage means for said main supply energy 693
Store said amount of low-side auxiliary supply energy for said integrated master controller circuit into said first storage means
Transport during the second time segment of said time slot scheme a controlled amount from said stored main supply energy into said means for storing said high-side auxiliary supply energy
Store said amount of high-side auxilary supply energy for said integrated slave controller circuit into said second storage means
$\stackrel{\uparrow}{\mathbb{E}}$ $FIG.$ 7D

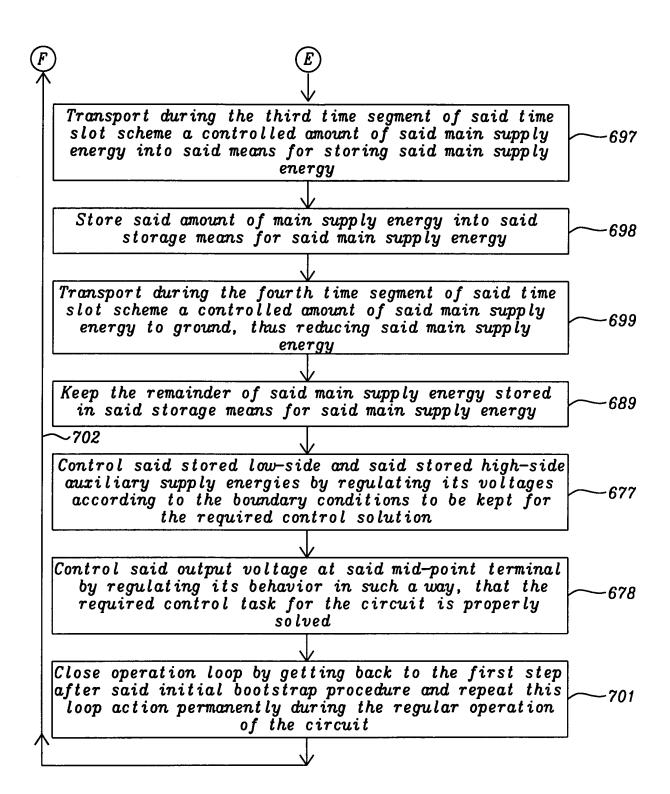


FIG. 7E